

A. CLASSEMENT DE L'OBJET DE LA DEMANDE
 CIB 7 A61F2/06 A61B17/22

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (système de classification suivi des symboles de classement)

CIB 7 A61F A61B A61M

Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si réalisable, termes de recherche utilisés)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie *	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
X, P ✓	WO 00 16845 A (SCIMED LIFE SYSTEMS, INC.) 30 mars 2000 (2000-03-30) abrégé page 3, ligne 8 - ligne 13 page 6, ligne 10 - page 7, ligne 16; figures 1,3	1-8
X ✓	US 4 655 219 A (PETRUZZI) 7 avril 1987 (1987-04-07) abrégé; figures 1-9	1-3, 7-9
Y		4-6
Y	US 5 370 657 A (IRIE) 6 décembre 1994 (1994-12-06) abrégé; figures 5-7	4-6
A ✓	WO 98 33443 A (YADAV JAY S ; ANGIOGUARD, INC.) 6 août 1998 (1998-08-06) abrégé; figures 1,2,4,5A	1, 4
	--- -/-	

☒ Voir la suite du cadre C pour la fin de la liste des documents☒ Les documents de familles de brevets sont indiqués en annexe

* Catégories spéciales de documents cités:

"A" document définissant l'état général de la technique, non considéré comme particulièrement pertinent

"E" document antérieur, mais publié à la date de dépôt international ou après cette date

"L" document pouvant jeter un doute sur une revendication de priorité ou cité pour déterminer la date de publication d'une autre citation ou pour une raison spéciale (telle qu'indiquée)

"O" document se référant à une divulgation orale, à un usage, à une exposition ou tous autres moyens

"P" document publié avant la date de dépôt international, mais postérieurement à la date de priorité revendiquée

"T" document ultérieur publié après la date de dépôt international ou la date de priorité et n'appartenant pas à l'état de la technique pertinent, mais cité pour comprendre le principe ou la théorie constituant la base de l'invention

"X" document particulièrement pertinent; l'invention revendiquée ne peut être considérée comme nouvelle ou comme impliquant une activité inventive par rapport au document considéré isolément

"Y" document particulièrement pertinent; l'invention revendiquée ne peut être considérée comme impliquant une activité inventive lorsque le document est associé à un ou plusieurs autres documents de même nature, cette combinaison étant évidente pour une personne du métier

"&" document qui fait partie de la même famille de brevets

Date à laquelle la recherche internationale a été effectivement achevée

2 octobre 2000

Date d'expédition du présent rapport de recherche internationale

09/10/2000

Nom et adresse postale de l'administration chargée de la recherche internationale

 Office Européen des Brevets, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
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Fonctionnaire autorisé

Michels, N

C.(suite) DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
A ✓	US 5 700 269 A (PINCHUK ET AL.) 23 décembre 1997 (1997-12-23) abrégé; figures 4-7 ---	1,4
A ✓	US 5 512 037 A (RUSSELL ET AL.) 30 avril 1996 (1996-04-30) ---	
A ✓	EP 0 813 842 A (ASAHI OPTICAL CO., LTD.) 29 décembre 1997 (1997-12-29) -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/FR 00/01624

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0016845	A	30-03-2000	AU 6161799 A	10-04-2000
US 4655219	A	07-04-1987	NONE	
US 5370657	A	06-12-1994	CA 2119814 A,C	27-09-1994
			DE 4410256 A	29-09-1994
			FR 2702953 A	30-09-1994
			GB 2276325 A,B	28-09-1994
			US 5626605 A	06-05-1997
WO 9833443	A	06-08-1998	AU 6052798 A	25-08-1998
			CA 2250777 A	06-08-1998
			EP 0938276 A	01-09-1999
			JP 2000504263 T	11-04-2000
US 5700269	A	23-12-1997	AU 721360 B	29-06-2000
			AU 7607796 A	05-06-1997
			CA 2234951 A	22-05-1997
			EP 0862384 A	09-09-1998
			JP 11501244 T	02-02-1999
			NO 982148 A	12-05-1998
			WO 9717899 A	22-05-1997
			AU 6093096 A	24-12-1996
			BR 9609355 A	21-12-1999
			CA 2223399 A	12-12-1996
			EP 0836416 A	22-04-1998
			JP 11503056 T	23-03-1999
			NO 975719 A	05-12-1997
			WO 9639077 A	12-12-1996
US 5512037	A	30-04-1996	NONE	
EP 0813842	A	29-12-1997	JP 9327463 A	22-12-1997
			JP 10005233 A	13-01-1998
			JP 10005234 A	13-01-1998
			JP 10005242 A	13-01-1998
			US 6090129 A	18-07-2000
			US 5993474 A	30-11-1999

Translation
10/018683

PATENT COOPERATION TREATY

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BIF 22210 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR00/01624	International filing date (day/month/year) 13 June 2000 (13.06.00)	Priority date (day/month/year) 14 June 1999 (14.06.99)
International Patent Classification (IPC) or national classification and IPC A61F 2/06		
Applicant ALN		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 11 January 2001 (11.01.01)	Date of completion of this report 23 August 2001 (23.08.2001)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR00/01624

I. Basis of the report

1. With regard to the **elements** of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages _____ 1-7 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____ 1-9 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the drawings:
pages _____ 1/3-3/3 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	4-6, 9	YES
	Claims	1, 2, 3, 7, 8	NO
Inventive step (IS)	Claims		YES
	Claims	4-6, 9	NO
Industrial applicability (IA)	Claims	1-9	YES
	Claims		NO

2. Citations and explanations**1. Reference is made to the following documents:**

D1: US-A-4 655 219

D2: WO-A-98 16274

Document D2 is not cited in the international search report.

2. Document D1, which is considered to be the prior art closest to the subject matter of claim 1, describes (see figure 2) a kit (32) for removing an umbrella-like blood vessel filter consisting of a tapered head acting as a retaining sleeve for a plurality of resilient fingers that are naturally spaced apart and end in outwardly directed hooks lodged against a vessel wall, including

- a first external catheter (60), and

- a rod (48) insertable into the external catheter and comprising a plurality of resilient fingers (42) at one end thereof that fan out from the rod, are naturally spaced apart and end in inwardly directed hooks for grasping the head as they are tightened

therearound.

It should be noted that the use of the kit for removing a blood vessel filter is not mentioned in document D1. However, the kit described in D1 is considered to be suitable for such a use.

Therefore, the subject matter of claim 1 is not novel (PCT Article 33(2)).

3. Dependent claims 2 to 9 do not contain any features which, when combined with the features of any one of the claims to which they refer, might define subject matter that complies with the requirements of novelty and/or inventive step of the PCT, for the following reasons:

- 3.1 The features of claims 2, 3, 7 and 8 are also already known from document D1 (see figure 6 and column 5, lines 39-60). The subject matter of these claims is not novel either (PCT Article 33(2)).
- 3.2 The subject matter of claim 4 does not involve an inventive step (PCT Article 33(3)) because a catheter having a rounded and closed front end for use as a dilator is known in the field in question (see, e.g., document D2, figure 8). It is obvious for a person skilled in the art to use such a third catheter with a kit as per document D1 and to determine the diameter of the third catheter in such a way that it is suitable for insertion into the external catheter.
- 3.3 Claims 5, 6 and 9 relate to the extracorporeally detectable device. Since such a device is also known

in the field of catheters (see D2, page 5, lines 3-4), the subject matter of these claims is not considered to be inventive (PCT Article 33(3)).

PCT

RAPPORT DE RECHERCHE INTERNATIONALE

(article 18 et règles 43 et 44 du PCT)

Référence du dossier du déposant ou du mandataire BIF 22210 PCT	POUR SUITE A DONNER voir la notification de transmission du rapport de recherche internationale (formulaire PCT/ISA/220) et, le cas échéant, le point 5 ci-après	
Demande internationale n° PCT/FR 00/ 01624	Date du dépôt international (jour/mois/année) 13/06/2000	(Date de priorité (la plus ancienne) (jour/mois/année) 14/06/1999
Déposant SOCI T + RESPONSABILIT LIMIT E DITE: ALN		

Le présent rapport de recherche internationale, établi par l'administration chargée de la recherche internationale, est transmis au déposant conformément à l'article 18. Une copie en est transmise au Bureau international.

Ce rapport de recherche internationale comprend 3 feuilles.

☒ Il est aussi accompagné d'une copie de chaque document relatif à l'état de la technique qui y est cité.

1. Base du rapport

- a. En ce qui concerne la **langue**, la recherche internationale a été effectuée sur la base de la demande internationale dans la langue dans laquelle elle a été déposée, sauf indication contraire donnée sous le même point.
- ☐ la recherche internationale a été effectuée sur la base d'une traduction de la demande internationale remise à l'administration.
- b. En ce qui concerne les **séquences de nucléotides ou d'acides aminés** divulguées dans la demande internationale (le cas échéant), la recherche internationale a été effectuée sur la base du listage des séquences :
- ☐ contenu dans la demande internationale, sous forme écrite.
- ☐ déposée avec la demande internationale, sous forme déchiffrable par ordinateur.
- ☐ remis ultérieurement à l'administration, sous forme écrite.
- ☐ remis ultérieurement à l'administration, sous forme déchiffrable par ordinateur.
- ☐ La déclaration, selon laquelle le listage des séquences présenté par écrit et fourni ultérieurement ne vas pas au-delà de la divulgation faite dans la demande telle que déposée, a été fournie.
- ☐ La déclaration, selon laquelle les informations enregistrées sous forme déchiffrable par ordinateur sont identiques à celles du listage des séquences présenté par écrit, a été fournie.

2. ☐ Il a été estimé que certaines revendications ne pouvaient pas faire l'objet d'une recherche (voir le cadre I).

3. ☐ Il y a absence d'unité de l'invention (voir le cadre II).

4. En ce qui concerne le titre,

- ☒ le texte est approuvé tel qu'il a été remis par le déposant.
- ☐ Le texte a été établi par l'administration et a la teneur suivante:

5. En ce qui concerne l'abrégé,

- ☒ le texte est approuvé tel qu'il a été remis par le déposant
- ☐ le texte (reproduit dans le cadre III) a été établi par l'administration conformément à la règle 38.2b). Le déposant peut présenter des observations à l'administration dans un délai d'un mois à compter de la date d'expédition du présent rapport de recherche internationale.

6. La figure des dessins à publier avec l'abrégé est la Figure n°

- ☒ suggérée par le déposant.
- ☐ parce que le déposant n'a pas suggéré de figure.
- ☐ parce que cette figure caractérise mieux l'invention.

2

☐ Aucune des figures n'est à publier.

PCT

REC'D 27 AUG 2001

WIPO

PCT

RAPPORT D'EXAMEN PRELIMINAIRE INTERNATIONAL



(article 36 et règle 70 du PCT)

Référence du dossier du déposant ou du mandataire BIF 22210 PCT	POUR SUITE A DONNER voir la notification de transmission du rapport d'examen préliminaire international (formulaire PCT/IPEA/416)	
Demande internationale n° PCT/FR00/01624	Date du dépôt international (jour/mois/année) 13/06/2000	Date de priorité (jour/mois/année) 14/06/1999
Classification internationale des brevets (CIB) ou à la fois classification nationale et CIB A61F2/06		
Déposant SOCIÉTÉ À RESPONSABILITÉ LIMITÉE DITE: ALN et al		

1. Le présent rapport d'examen préliminaire international, établi par l'administration chargée de l'examen préliminaire international, est transmis au déposant conformément à l'article 36.
2. Ce RAPPORT comprend 5 feuilles, y compris la présente feuille de couverture.
- ☐ Il est accompagné d'ANNEXES, c'est-à-dire de feuilles de la description, des revendications ou des dessins qui ont été modifiées et qui servent de base au présent rapport ou de feuilles contenant des rectifications faites auprès de l'administration chargée de l'examen préliminaire international (voir la règle 70.16 et l'instruction 607 des Instructions administratives du PCT).
- Ces annexes comprennent feuilles.

3. Le présent rapport contient des indications relatives aux points suivants:

- I ☒ Base du rapport
- II ☐ Priorité
- III ☐ Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle
- IV ☐ Absence d'unité de l'invention
- V ☒ Déclaration motivée selon l'article 35(2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration
- VI ☐ Certains documents cités
- VII ☐ Irrégularités dans la demande internationale
- VIII ☐ Observations relatives à la demande internationale

Date de présentation de la demande d'examen préliminaire internationale 11/01/2001	Date d'achèvement du présent rapport 23.08.2001
Nom et adresse postale de l'administration chargée de l'examen préliminaire international:  Office européen des brevets D-80298 Munich Tél. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Fonctionnaire autorisé Böttcher, S N° de téléphone +49 89 2399 2875 

RAPPORT D'EXAMEN PRÉLIMINAIRE INTERNATIONAL

Demande internationale n° PCT/FR00/01624

I. Base du rapport

1. En ce qui concerne les **éléments** de la demande internationale (*les feuilles de remplacement qui ont été remises à l'office récepteur en réponse à une invitation faite conformément à l'article 14 sont considérées dans le présent rapport comme "initialement déposées" et ne sont pas jointes en annexe au rapport puisqu'elles ne contiennent pas de modifications (règles 70.16 et 70.17)*):

Description, pages:

1-7 version initiale

Revendications, N°:

1-9 version initiale

Dessins, feuilles:

1/3-3/3 version initiale

2. En ce qui concerne la **langue**, tous les éléments indiqués ci-dessus étaient à la disposition de l'administration ou lui ont été remis dans la langue dans laquelle la demande internationale a été déposée, sauf indication contraire donnée sous ce point.

Ces éléments étaient à la disposition de l'administration ou lui ont été remis dans la langue suivante: , qui est :

- ☐ la langue d'une traduction remise aux fins de la recherche internationale (selon la règle 23.1(b)).
- ☐ la langue de publication de la demande internationale (selon la règle 48.3(b)).
- ☐ la langue de la traduction remise aux fins de l'examen préliminaire internationale (selon la règle 55.2 ou 55.3).

3. En ce qui concerne les **séquences de nucléotides ou d'acide aminés** divulguées dans la demande internationale (le cas échéant), l'examen préliminaire internationale a été effectué sur la base du listage des séquences :

- ☐ contenu dans la demande internationale, sous forme écrite.
- ☐ déposé avec la demande internationale, sous forme déchiffrable par ordinateur.
- ☐ remis ultérieurement à l'administration, sous forme écrite.
- ☐ remis ultérieurement à l'administration, sous forme déchiffrable par ordinateur.
- ☐ La déclaration, selon laquelle le listage des séquences par écrit et fourni ultérieurement ne va pas au-delà de la divulgation faite dans la demande telle que déposée, a été fournie.
- ☐ La déclaration, selon laquelle les informations enregistrées sous déchiffrable par ordinateur sont identiques à celles du listage des séquences Présenté par écrit, a été fournie.

4. Les modifications ont entraîné l'annulation :

**RAPPORT D'EXAMEN
PRÉLIMINAIRE INTERNATIONAL**

Demande internationale n° PCT/FR00/01624

- ☐ de la description, pages :
- ☐ des revendications, n°s :
- ☐ des dessins, feuilles :

5. ☐ Le présent rapport a été formulé abstraction faite (de certaines) des modifications, qui ont été considérées comme allant au-delà de l'exposé de l'invention tel qu'il a été déposé, comme il est indiqué ci-après (règle 70.2(c)) :

(Toute feuille de remplacement comportant des modifications de cette nature doit être indiquée au point 1 et annexée au présent rapport)

6. Observations complémentaires, le cas échéant :

V. Déclaration motivée selon l'article 35(2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration

1. Déclaration

Nouveauté	Oui : Revendications 4-6, 9
	Non : Revendications 1, 2, 3, 7, 8
Activité inventive	Oui : Revendications
	Non : Revendications 4-6, 9
Possibilité d'application industrielle	Oui : Revendications 1-9
	Non : Revendications

2. Citations et explications
voir feuille séparée

Concernant le point V

Déclaration motivée quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration

1. Il est fait référence aux documents suivants:

D1: US-A-4 655 219

D2: WO-A-98 16274

Le document D2 n'a pas été cité dans le rapport de recherche international.

2. Le document D1, qui est considéré comme étant l'état de la technique le plus proche de l'objet de la revendication 1, décrit (voir Fig. 2): un kit (32) pour le retrait d'un filtre pour vaisseau sanguin du type parapluie formé d'une ogive servant de manchon de retenue à une pluralité de brins élastiques naturellement écartés les uns des autres et terminés en crochets dirigés vers l'extérieur pour se bloquer sur la paroi d'un vaisseau, qui comprend
- un premier cathéter externe (60)
 - une tige (48) apte à s'insérer dans le cathéter externe et comportant à une de ses extrémités une pluralité de branches élastiques (42) s'évasant à partir de la tige, naturellement écartées les unes des autres et terminées en crochets dirigés vers l'intérieur pour agripper l'ogive du filtre en se resserrant.

Il est noté que dans le document D1 l'usage du kit pour le retrait d'un filtre pour vaisseau sanguin n'est pas mentionné. Pourtant, le kit décrit dans D1 est considéré être apte à cet usage.

À cause de cela, l'objet de la revendication 1 n'est pas nouveau (article 33(2) PCT).

3. Les revendications dépendantes 2 à 9 ne contiennent aucune caractéristique qui, en combinaison avec celles de l'une quelconque des revendications à laquelle elles se réfèrent, définisse un objet qui satisfasse aux exigences du PCT en ce qui concerne la nouveauté et/ou l'activité inventive, et ce pour les raisons

suivantes:

- 3.1 Les caractéristiques des revendications 2, 3, 7 et 8 sont aussi déjà connues du document D1 (voir Fig. 6 et colonne 5, lignes 39 à 60). L'objet de ces revendications n'est pas nouveau non plus (article 33(2) PCT).
- 3.2 L'objet de la revendication 4 n'implique pas d'activité inventive (article 33(3) PCT) parce qu'un cathéter avec une extrémité avant fermée et émoussée pour servir de dilatateur est connu dans ce domaine (voir par exemple document D2, figure 8). Il est évident pour la personne du métier d'utiliser un tel troisième cathéter avec un kit suivant le document D1 et d'adapter le diamètre du troisième cathéter à l'introduction dans le cathéter externe.
- 3.3 Les revendications 5, 6 et 9 concernent le dispositif détectable extracorporellement. Car un tel dispositif est aussi connu dans le domaine des cathéters (voir D2, page 5, lignes 3-4), l'objet de ces revendications n'est pas considéré comme inventive (article 33(3) PCT).

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 457 077 A2

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **91106718.9**

(51) Int. Cl.⁵: **H04M 3/50, G06F 3/023**

(22) Date of filing: **25.04.91**

(30) Priority: **16.05.90 US 525365**

(43) Date of publication of application:
21.11.91 Bulletin 91/47

(84) Designated Contracting States:
AT BE DE ES FR GB IT NL

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804 Austin, TX 78754(US)

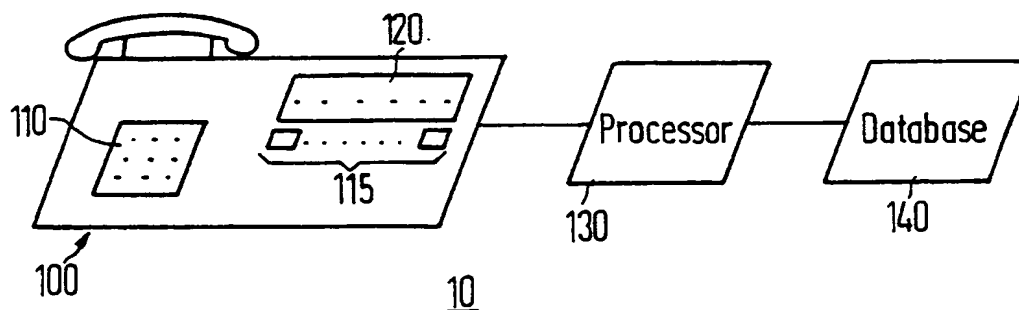
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(54) **Accessing alphanumeric information using a numeric keypad.**

(57) Method and apparatus for accessing alphanumeric data, such as a person's first name, last name, and telephone number, from a database using information provided by keypads and, in particular, from numeric keypads, which information relates to characters from the person's first name and/or characters from the person's last name. Specifically, the inventive apparatus includes: (a) function keypads which identify the input as to last name or first

name; (b) numeric keypads for receiving input related to either the first name or the last name; (c) means for grouping input information which relates to the first name and to the last name; (d) means for searching the database by means of the portions of the first and last name and identifying the part of the database which matches the portions thereof; and (e) means for displaying the identified part of the database.

FIG1



EP 0 457 077 A2

Technical field of the Invention

The present invention pertains to method and apparatus for accessing alphanumeric data from a database and, in particular, to method and apparatus for accessing alphanumeric data from a database using information provided by keypads. Further, in particular, the present invention pertains to method and apparatus for accessing alphanumeric data from a database using information provided by numeric keypads such as, for example and without limitation, numeric keypads associated with a telephone set.

Background of the Invention

There is a need, which is well known in industry, to establish central databases of information and to provide that information to users in a quick and efficient manner. As a result, at present, many corporate databases and corporate directories reside on host computers. Further, there is an additional need which is also well known need in industry to be able to access and retrieve information from such databases from a telephone set.

In responding to this need, several methods ("prior art methods") have been developed to permit a user to access and retrieve alphanumeric information from a database using numeric pads which are typically provided with a telephone set. One such prior art method is utilized in a system developed by ROLM Systems, which system is referred to as the ROLM Systems PhoneMail system. The ROLM Systems PhoneMail system requires a user to utilize numeric keypads associated with a telephone set to input a single string of digits which relate to the characters of the last name and the first name. This aspect of the ROLM Systems PhoneMail system suffers from several drawbacks. Specifically, the ROLM Systems PhoneMail system does not provide the capability of searching the database by last name alone, by first name alone, or by a combination of some, and not all, of the characters from the last name and first name.

Another such prior art method requires a user to depress numeric keypads associated with a telephone set a predetermined number of times to reference a particular alphabetic character. This method is used because each numeric keypad on a typical telephone set relates to a multiplicity of alphabetic characters. For example, to enter FORD using numeric keypads on a typical telephone set: "F" is entered by pressing the "3" keypad three (3) times; "O" is entered by pressing the "6" keypad three (3) times; "R" is entered by pressing the "7" keypad two (2) times; and "D" is entered by pressing the "3" keypad one (1) time.

Still another such prior art method requires a user to utilize numeric keypads associated with a telephone set to enter a numeric code which is an access key for a name in the database. Then, in accordance with this prior art method, the user may retrieve a telephone number from the database which is associated with that name.

All of the above-described methods suffer from two basic drawbacks. First, a user may not know how to spell the full name of a person and, as a result, the user will be unable to access a database. Second, the prior art methods described above often require the user to utilize a large number of keypad strokes to retrieve data from the database.

As a result of the above, there is a need for method and apparatus for accessing alphanumeric data, such as, for example, a person's first name, last name, and telephone number, from a database using information provided by keypads and, in particular, by numeric keypads, which information relates to characters from the person's first name and/or characters from the person's last name.

Summary of the Invention

Embodiments of the present invention advantageously satisfy the above-identified need in the art and provide method and apparatus for accessing alphanumeric data, such as, for example, a person's first name, last name, and telephone number, from a database using information provided by keypads and, in particular, by numeric keypads, which information relates to characters from the person's first name and/or characters from the person's last name.

Embodiments of the present invention enable a user to access a database by first name, by last name, or by some combination of a portion of first name and last name using information obtained from numeric keypads. In addition, embodiments of the present invention enable the user to change between the access search modes at any time during the access search process. Embodiments of the present invention are advantageous because they enable the access process to narrow the possible database matches more quickly than occurs with prior art methods and they also enables the user to access database entries corresponding to names of persons the user may not know how to spell. Lastly, a scroll access search mode is available to a user at any time during the access search process, which scroll access search mode enables the user, after having accessed a particular entry in the database, to scroll through and display related entries.

In general, an embodiment of the present invention is apparatus for searching a database hav-

ing an access key which is comprised of a multiplicity of data fields, which apparatus comprises: (a) function keypad means, responsive to input from a user, for providing first information to identify the data fields to which second information which is input by the user is associated; (b) data input keypad means, responsive to input from the user, for providing second information which is associated with the data fields identified by the first information; (c) means for grouping second information which is associated with each of the multiplicity of data fields into input portions thereof; (d) means for searching the database and identifying the part of the database which matches the input portions of the multiplicity of data fields; and (e) means for displaying the identified part of the database. In addition, in further embodiments, the means for displaying the identified part of the database comprises further function keypad means, responsive to input from the user, for providing third information to signal whether to display a first predetermined section of the identified part of the database or to display a second predetermined section of the identified part of the database.

Brief Description of the Drawing

A complete understanding of the present invention may be gained by considering the following detailed description in conjunction with the accompanying drawing, in which:

FIG. 1 is a block diagram of an embodiment of the present invention; and

FIGs. 2A-2F comprise a flowchart of software which is used to fabricate a preferred embodiment of the present invention.

Detailed Description

FIG. 1 is a block diagram of embodiment 10 of the present invention. As shown in FIG. 1, telephone 100 is comprised of numeric keypads 110, function keypads 115, and display 120. Telephone 100 is connected to processor 130 and processor 130 is connected, in turn, to database system 140. Telephone 100 is fabricated in accordance with methods well known to those of ordinary skill in the art and may be a telephone which is commercially available such as, for example, a ROLMPhone 244/PC which is manufactured by ROLM Systems of Austin, Texas. In the embodiment shown in FIG. 1, display 120 is comprised of a two-line LCD display, however, the present invention is not limited to two-line displays and display 120 may comprise any number of lines.

Telephone 100 sends signals to processor 130, which signals identify keypad strokes and processor 130 sends signals to telephone 100, which

signals produce character displays on display 120. In a preferred embodiment of the present invention, processor 130 is an IBM PS/2 personal computer which is available from International Business Machines Corp. but processor 130 may be any type of processor which can carry out the steps indicated in the flowchart of FIGs. 2A-2F such as, for example, a microprocessor that may be configured to reside within the physical confines of telephone 100.

Database 140 is a database system which stores a database on, for example, magnetic disk storage. Further, information is accessed from this database and this database is created in a manner which is well known to those of ordinary skill in the art. It should be clear to those of ordinary skill in the art that the present invention is not limited to the use of database which is created and maintained by a processor such as a personal computer and, in other embodiments, database system 140 may reside at a private branch exchange (PBX) such as the CBX 8000 which is available from ROLM Systems. In such an embodiment, the database would be accessed by the processor or portions thereof could be transferred, i.e., downloaded, from the switch to the processor. Still further, in still other embodiments, portions of the database could be downloaded from the switch to a processor-and-storage system which is contained within telephone 100 itself.

Numeric keypads 110 comprise numerical keypads which are well known in the art such as numeric keypads which are associated with a telephone set which are used for dialing telephone numbers.

Lastly, function keypads 115 are keypads which are well known to those of ordinary skill in the art for producing signals which are identified by processor 130 as corresponding to predetermined functions. Those of ordinary skill in the art should understand that the present invention is not limited to the use of a particular number of predetermined function keypads since, under software control, particular keypads may be used to provide several functions during the operation of the apparatus to perform a predetermined function. Further, those of ordinary skill in the art should also understand that the present invention does not require the use of function keypads at all because, instead of using a particular function keypad to invoke a specific function, predetermined combinations of numeric keypad strokes may be interpreted by processor 130 to invoke such specific functions.

Before describing the operation of embodiment 10 of the present invention shown in FIG. 1 in detail with reference to FIG. 2, we will describe how embodiment 10 operates in general.

Assume that database 140 is, for example, a

corporate directory whose data is retrieved by alphanumeric name. If a user wants to place a telephone call to, for example, Clarke Kent, he will press a function keypad denoted, for example, as DIRECTORY to invoke the DIRECTORY search function. As is well known to those of ordinary skill in the art, such function keypads may be specific ones of function keypads 115 which are reserved exclusively for use by the user to invoke specific functions or, in other embodiments, such function keypads may be software settable function keypads or, in still other embodiments, the function keypads may be a combination of reserved and software settable function keypads. In an embodiment wherein a specific function keypad is set by software, processor 130 sends a message to telephone 100 to be displayed on display 120 to indicate the particular function which is presently invoked by a particular one of function keypads 115.

After the user presses the DIRECTORY function keypad, telephone 100 sends a signal to processor 130 which is interpreted to indicate that the user invoked the DIRECTORY function. In response, processor 130 will send a signal to telephone 100 to cause display 120 to display, for example, the following message: "SELECT SEARCH MODE." The user may then have the option of invoking three functions, SCROLL, FIRST NAME SEARCH, or LAST NAME SEARCH. In this embodiment, software settable function keypads are used to interact with the inventive system and, to display these functions, processor 130 sends a message to telephone 130 to cause the function keypad functions to be displayed on display 120 in the vicinity of the specific ones of function keypads 115.

The user may scroll through the list by pressing the SCROLL function keypad. Further, the SCROLL function keypad may be split into portions to permit scrolling forward or backward on the list. Still further, the user may narrow his scroll search by indicating that scroll be between the following ranges of letters: A-G, H-O, or P-Z. As above, this capability is implemented by means of resetting function keypads in accordance with resetting displays, all in accordance with software. Then, for example, if the user selected a function keypad to invoke scrolling in the range of letters H-O, the software may again permit the scroll range to narrow by giving the user a choice of the following ranges: H-I, J-K, and L-O. If the user wants to enter the directory by means of last name, he will press the LAST NAME SEARCH function keypad. Processor 130 will note the request and be ready to interpret the numeric keypad input as relating to last names. The user then uses numeric keypads to enter the last name. For example, for the name

Kent, he will press the following numeric keypads: "5" corresponding to the letters JKL, "3" corresponding to the letters DEF, "6" corresponding to the letters MNO, and "8" corresponding to the letters TW. Of course, in accordance with advantageous use of the present invention, the user may only enter the first letter of the last name or the first two letters or the last name, and so forth, instead of entering the entire last name. In addition, at any time, the user may press the FIRST NAME SEARCH function keypad and begin entering all or a portion of the first name.

Now let us describe the information that is displayed to the user as he enters information by depressing the numeric keypads. After the user has depressed the "5" keypad, processor 130 accesses database entries corresponding to last names beginning with J, database entries corresponding to last names beginning with K, and database entries corresponding to last names beginning with L. These entries may be accessed and made accessible in sequence from the first entry for J to the last entry for L in a manner which is well known to those of ordinary skill in the art such as, for example, by means of a linked list. Processor 130 will then cause display 120 to display a database entry, for example, from the middle of this list.

It is important to note that the user may switch to a first name narrowing of the last name search at anytime by pressing the FIRST NAME SEARCH function keypad. After that, processor 130 will narrow the search to first names to find a match. In addition, the user may, at any time, switch back to the last name search and vice versa.

Lastly, when there is a match of the input and a name in database 140, processor 130 will display the full name and telephone number. The user may then depress the DIAL function keypad to cause the system to dial the telephone number.

We will now discuss three simple examples to help illustrate the general discussion set forth above. In example 1, a user wishes to place a call to Mr. King. He presses the DIRECTORY function keypad on his telephone and he then presses the LAST NAME SEARCH function keypad to invoke a last name search. He then presses the following numeric keypads: "5"; "4"; "6"; and "4". Processor 130 searches database 140 and retrieves four matched entries for King. The fact that four entries were found may be indicated on display 120 in one embodiment of the present invention, for example, by a message "KING -4 entries" or, in another embodiment of the present invention display 120 may be flashed four (4) times. At this point, the user has the option of switching to the first name search by depressing the FIRST NAME SEARCH function keypad or to scroll through the four

matched entries by depressing the SCROLL down function keypad. Since, in this particular example, the user is unsure of Mr. King's first name, he depresses the SCROLL down function keypad and the following entries are displayed sequentially on display 120:

King, James X2222
King, Kellie X9999
King, Skylar X6666
King, Will X4444

The user recognizes Mr. King's first name as being Skylar and he causes the system to dial Skylar King's telephone number by pressing the DIAL function keypad.

In example 2, a user needs to call Peter Parker but he has misplaced Peter's telephone number. The user presses the DIRECTORY function keypad on his telephone and he then presses the LAST NAME SEARCH function keypad to invoke a last name search. He then presses the following numeric keypads: "7" and "2" to select Pa. The user then decides to switch to the first name search by pressing the FIRST NAME SEARCH keypad and he presses the following keypads: "7" and "3" to select Pe. Processor 130 finds a match in the database for:

Parker, Peter X5555

The user then causes the system to dial this telephone number by pressing the DIAL function keypad.

In example 3, a user wants to call Jackie James. The user presses the DIRECTORY function keypad on his telephone and he then presses the SCROLL function keypad. Processor 130 presents the display 120 with the following ranges: A-G, H-O, and P-Z.

The user selects H-O and processor 130 presents display 120 with further alphabetic ranges: H-I, J-K, and L-O. The user selects the range of J-K and he begins to scroll through the directory listings that begin with J. The telephone system can dial the telephone number indicated by the database entry. We now turn to describe the manner in which system 10 operates in detail with reference to the flowchart shown in FIG. 2. Specifically, as shown at FIG. 2, at box 200, the program in processor 130 initializes the directory search. In particular, the program causes a message to be displayed on display 120 in the vicinity of a function keypad that indicates that the keypad provides a directory search function. Then control is transferred to box 210.

At box 210, control variables for the program are initialized. In particular, SEARCH TYPE is set equal to LAST NAME, LAST NAME CHARACTER ENTRY POSITION = 1 to indicate that the system is ready for the first character in the last name to be entered, and FIRST NAME CHARACTER EN-

TRY POSITION = 1 to indicate that the system is ready for the first character in the first name to be entered. Finally, processor 130 sends a signal to display 120 to cause the function keypads LAST NAME SEARCH, FIRST NAME SEARCH, and SCROLL to be displayed. Then, control is passed to decision box 220.

At decision box 220, the program determines whether a keypad has been pressed. If a keypad has not been pressed, the program just loops back to decision box 220. However, if a keypad was pressed, control is transferred to decision box 225.

At decision box 225, the program determines whether the pressed keypad was the CLEAR function keypad. If it was, then control is transferred to box 200 to restart the directory search, otherwise, control is transferred to decision box 230.

At decision box 230, the program determines whether the pressed keypad was the LAST NAME SEARCH function keypad. If it was, then control is transferred to box 240, otherwise, control is transferred to decision box 280.

At box 240, the program sets the variable SEARCH TYPE equal to LAST NAME and control is transferred to decision box 250.

At decision box 250, the program determines whether the LAST NAME CHARACTER POSITION = 1 and the FIRST NAME CHARACTER POSITION = 1. If so, then control is transferred to box 260, otherwise, control is transferred to box 270.

At box 260, processor 130 sends a message to display 120 to display the following message: "ENTER CHARACTERS FROM THE DIAL PAD FOR THE LAST NAME." Then, control is transferred to decision box 220 to await the next keypad entry.

At box 270, processor 130 displays an entry from the currently narrowed database and the cursor is set to highlight the character at the LAST NAME CHARACTER POSITION. Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 280, the program determines whether the pressed keypad was the FIRST NAME SEARCH function keypad. If it was, then control is passed to box 290, otherwise, control is passed to decision box 330.

At box 290, the program sets the variable SEARCH TYPE equal to FIRST NAME and control is transferred to decision box 300.

At decision box 300, the program determines whether the LAST NAME CHARACTER POSITION = 1 and the FIRST NAME CHARACTER POSITION = 1. If so, then control is transferred to box 310, otherwise, control is transferred to box 320.

At box 310, processor 130 sends a message to display 120 to display the following message: "ENTER CHARACTERS FROM THE DIAL PAD

FOR THE FIRST NAME." Then, control is transferred to decision box 220 to await the next keypad entry.

At box 320, processor 130 displays an entry from the currently narrowed database and the cursor is set to highlight the character at the FIRST NAME CHARACTER POSITION. Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 330, the program determines whether the pressed keypad was a numeric keypad which is typically used for dialing. If it was, then control is transferred to decision box 340, otherwise, control is transferred to decision box 410.

At decision box 340, the program determines whether SEARCH TYPE equals FIRST NAME. If it is, control is transferred to box 350, otherwise, control is transferred to box 360.

At box 350, the program narrows the database by eliminating entries which do not match the possibilities for first name indicated by the latest numeric keypad entry. Then, control is transferred to decision box 370.

At box 360, the program narrows the database by eliminating entries which do not match the possibilities of last name indicated by the latest numeric keypad entry. Then, control is transferred to decision box 370.

At decision box 370, the program determines whether the number of records in the narrowed database equals 0. If it does, control is transferred to box 380, otherwise, control is transferred to decision box 390.

At box 380, processor 130 sends a message to display 120 to display the following message: "NO MATCH FOUND." Then, control is transferred to box 200 to start the directory function again.

At decision box 390, the program determines whether the number of records in the narrowed database equals 1. If it does, control is transferred to box 400, otherwise, control is transferred to decision box 401.

At box 400, processor 130 sends a message to display 120 to display the record corresponding to the unique match. Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 401, the program determines whether the variable SEARCH TYPE equals FIRST NAME. If it does, control is transferred to box 402, otherwise, control is transferred to box 404.

At box 402, the program increments the FIRST NAME CHARACTER POSITION and control is transferred to box 403.

At box 403, processor 130 displays an entry from the currently narrowed database and the cursor is set to highlight the character at the FIRST NAME CHARACTER POSITION. Then, control is transferred to decision box 220 to await the next

keypad entry.

At box 404, the program increments the LAST NAME CHARACTER POSITION and control is transferred to box 405.

At box 405, processor 130 displays an entry from the currently narrowed database and the cursor is set to highlight the character at the LAST NAME CHARACTER POSITION. Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 410, the program determines whether the LAST NAME CHARACTER POSITION = 1 and the FIRST NAME CHARACTER POSITION = 1. If so, then control is transferred to box 420, otherwise, control is transferred to decision box 420.

At box 420, processor 130 sends a message to display 120 to display the following message: "INVALID CHARACTER." Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 430, the program determines whether the pressed keypad was a SCROLL function keypad. If it was, then control is transferred to decision box 440, otherwise, control is transferred to decision box 470.

At decision box 440, the program determines whether the SCROLL function keypad referred to a scroll-up or a scroll-down function. If the function keypad referred to a scroll-up, then control is transferred to box 450, otherwise, control is transferred to box 460.

At box 450, processor 130 displays the preceding entry from the currently narrowed database and the cursor is set to highlight the character at the LAST or FIRST NAME CHARACTER POSITION, depending on whether SEARCH TYPE equals LAST or FIRST NAME. Then, control is transferred to decision box 220 to await the next keypad entry.

At box 460, processor 130 displays the succeeding entry from the currently narrowed database and the cursor is set to highlight the character at the LAST or FIRST NAME CHARACTER POSITION, depending on whether SEARCH TYPE equals LAST or FIRST NAME. Then, control is transferred to decision box 220 to await the next keypad entry.

At decision box 470, the program determines whether the pressed keypad was the DIAL function keypad. If it was, then control is transferred to box 480, otherwise, control is transferred to decision box 500.

At box 480, the program retrieves the telephone number from the database entry and transmits it to the telephone with a command to cause the telephone number to place a call to that telephone number. Then, control is transferred to box 490 to end the directory search function.

At decision box 500, the program determines whether the pressed keypad was the QUIT function keypad. If it was, control is transferred to box 490 to end the directory search function, otherwise, control is transferred to box 420.

The following describes the method by which database entries are obtained from the database in response to input received from a numeric keypad. As one can readily appreciate, in embodiments where the input numerical keypads each refer to a possible three letters, the system must use a method for choosing the database entries which are possibilities that the user desires to retrieve. This can best be understood by considering the following simple example. Assume that the user wishes to retrieve the name RUST from a database. To do so using a typical telephone keypad, the user would press the following keys in turn: "7" corresponding to letters PRS, "8" corresponding to letters TUV, "7" corresponding to letters PRS, and "8" corresponding to TUV. In accordance with the embodiment of the present invention described above, the preferred embodiment includes the further requirement wherein the program which does the retrieval first uses the middle letter in the range of possibilities for a keypad stroke to look for possible database entry matches. Thus, in this example, after the first keypad stroke, the program accesses and maintains a linked list of last names beginning with R, P and S. Then, after the second keypad stroke is entered, the program eliminates: (a) from the list beginning with R, all those except ones starting with RU, RT or RV; (b) from the list beginning with P, all those except ones beginning with PU, PT or PV; and (c) from the list beginning with S, all those except ones beginning with SU, ST or SY. As one can readily appreciate, this process alone should eliminate a substantial number of database entries. Then, after the third keypad is entered, the program eliminates: (a) from the list beginning with R, all those except ones starting with RUR, RUP, RUS, RTR, RTP, RTS, RVR, RVP or RVS; (b) from the list beginning with P, all those except ones starting with PUR, PUP, PUS, PTR, PTP, PTS, PVR, PVP or PVS; and (c) from the list beginning with S, all those except ones starting with SUR, SUP, SUS, STR, STP, STS, SVR, SVP or SVS. Then, this is followed in similar manner by the next keypad entry.

Of course, the user may cause a switch to a first name search or to a scroll search at any time to enhance the efficiency of the above-described retrieval process.

Further, those skilled in the art recognize that further embodiments of the present invention may be made without departing from its teachings. For example, embodiments of the present invention may operate even more efficiently in terms of

database retrieval where the keypad entries are made into a keypad set which is comprised of sets of keypads which are reserved for alphabetic entry. In addition, a specific embodiment of the present invention searches for the letter "Q" when the "7" key is pressed and the letter "Z" when the "9" key is pressed. In such an embodiment the "7" corresponds to PQRS and the "9" corresponds to WXYZ.

Claims

1. Apparatus for searching a database in response to input, the database having an access key which is comprised of a multiplicity of data fields, which apparatus comprises: function keypad means, responsive to input, for providing first information to identify the data fields to which second information which is input is associated; data input keypad means, responsive to input, for providing the second information which is associated with the data fields identified by the first information; means for grouping second information which is associated with the multiplicity of data fields into input portions thereof; means for searching the database and identifying the part of the database which matches the input portions of the multiplicity of data fields; and means for displaying the identified part of the database.
2. The apparatus of claim 1 wherein the means for displaying the identified part of the database comprises: further function keypad means, responsive to input, for providing third information to signal whether to display a first predetermined section of the identified part of the database or to display a second predetermined section of the identified part of the database.
3. The apparatus of claim 2 wherein the function keypad means are function keypads on a telephone set.
4. The apparatus of claim 3 wherein the function keypads are function keys whose functions may be varied.
5. The apparatus of claim 2 wherein the data input keypad means comprise alphabetic keypad means.
6. The apparatus of claim 2 wherein the data input keypad means comprise numeric keypad

means.

7. The apparatus of claim 6 wherein the function keypad means comprise a first name function keypad for providing information which identifies a first name data field and a last name function keypad for providing information which identifies to a last name data field. 5

8. The apparatus of claim 7 wherein the display means comprises a display on a telephone set. 10

9. The apparatus of claim 7 wherein the further function keypad means comprises a scroll-up function keypad and a scroll-down function keypad. 15

10. The apparatus of claim 8 which further comprises a still further function keypad means, responsive to input, for providing forth information to cause the apparatus to retrieve a telephone number which is stored in the database for at least one of the displayed parts thereof and to cause the apparatus to dial the telephone number. 20
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11. Method for searching a database in response to input, the database having an access key which is comprised of a multiplicity of data fields, which method comprises the steps of: 30
receiving input which identifies the data fields to which information which is input is associated;
receiving information which is associated with the identified data fields; 35
grouping input information which is associated with the multiplicity of data fields into input portions thereof;
searching the database and identifying the part of the database which matches the input portions of the multiplicity of data fields; and 40
displaying the identified part of the database.

12. the method of claim 11 which further comprises the step of: receiving input which signals whether to display a first predetermined section of the identified part of the database or to display a second predetermined section of the identified part of the database. 45
50

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FIG1

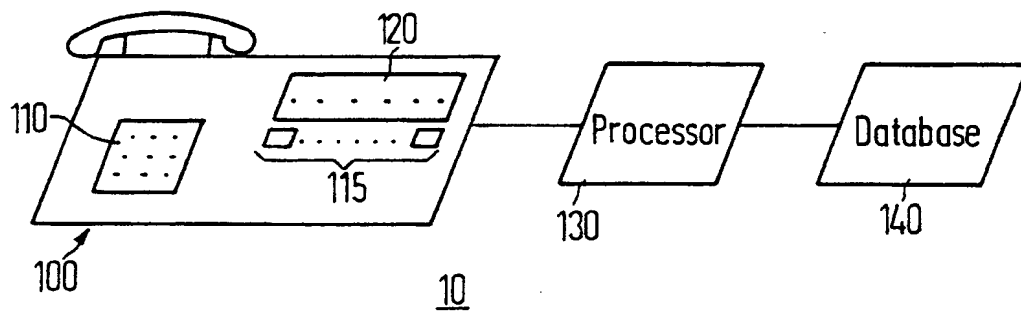


FIG 2A

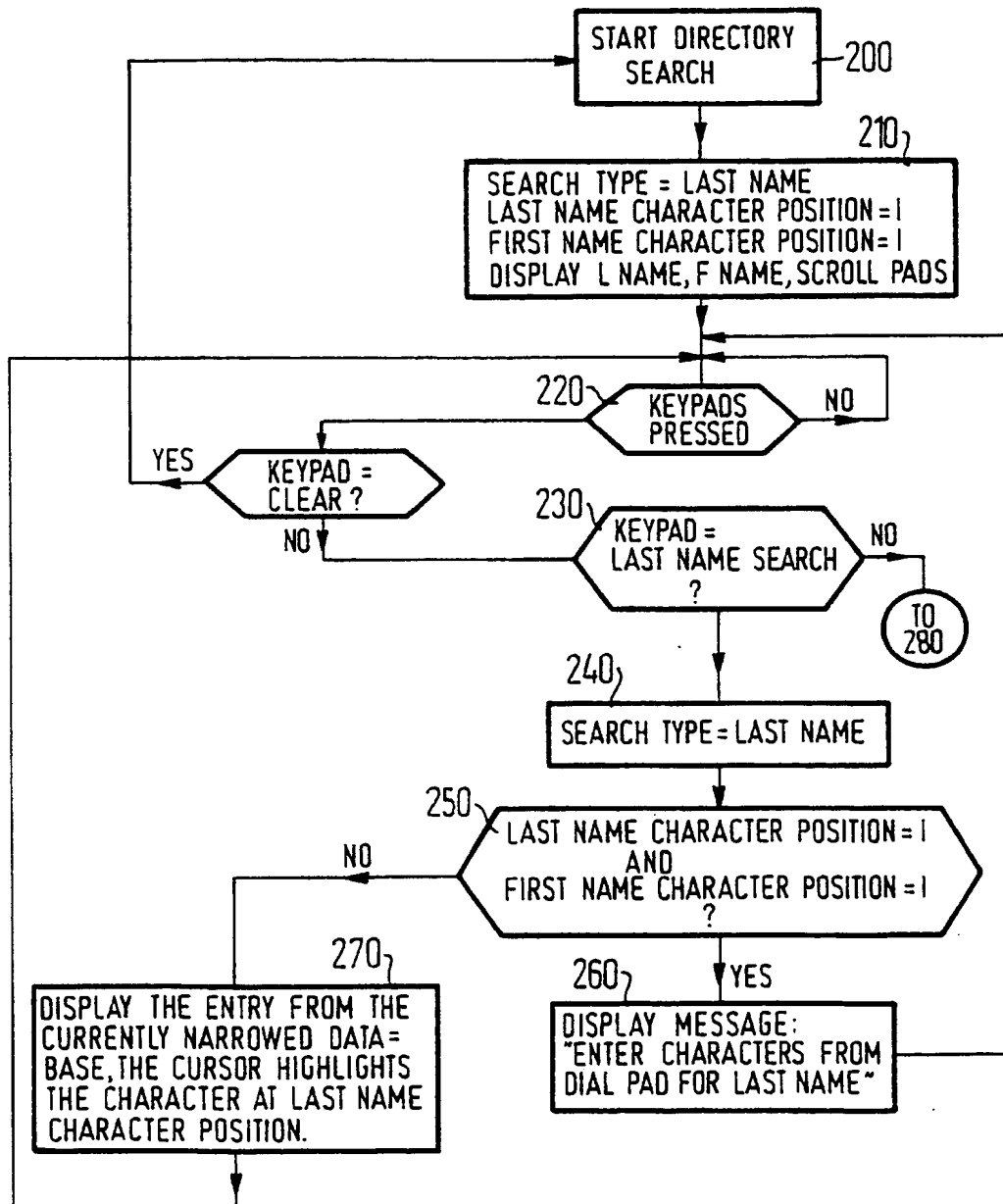


FIG 2B

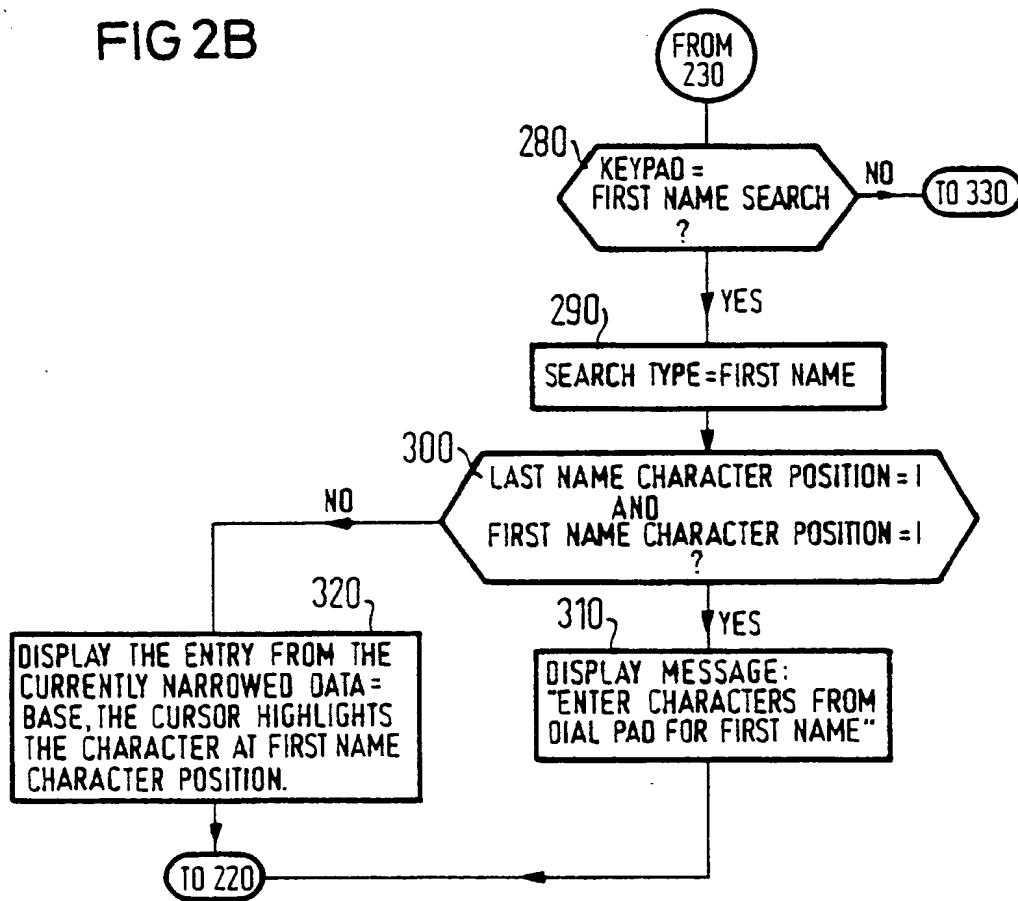


FIG 2C

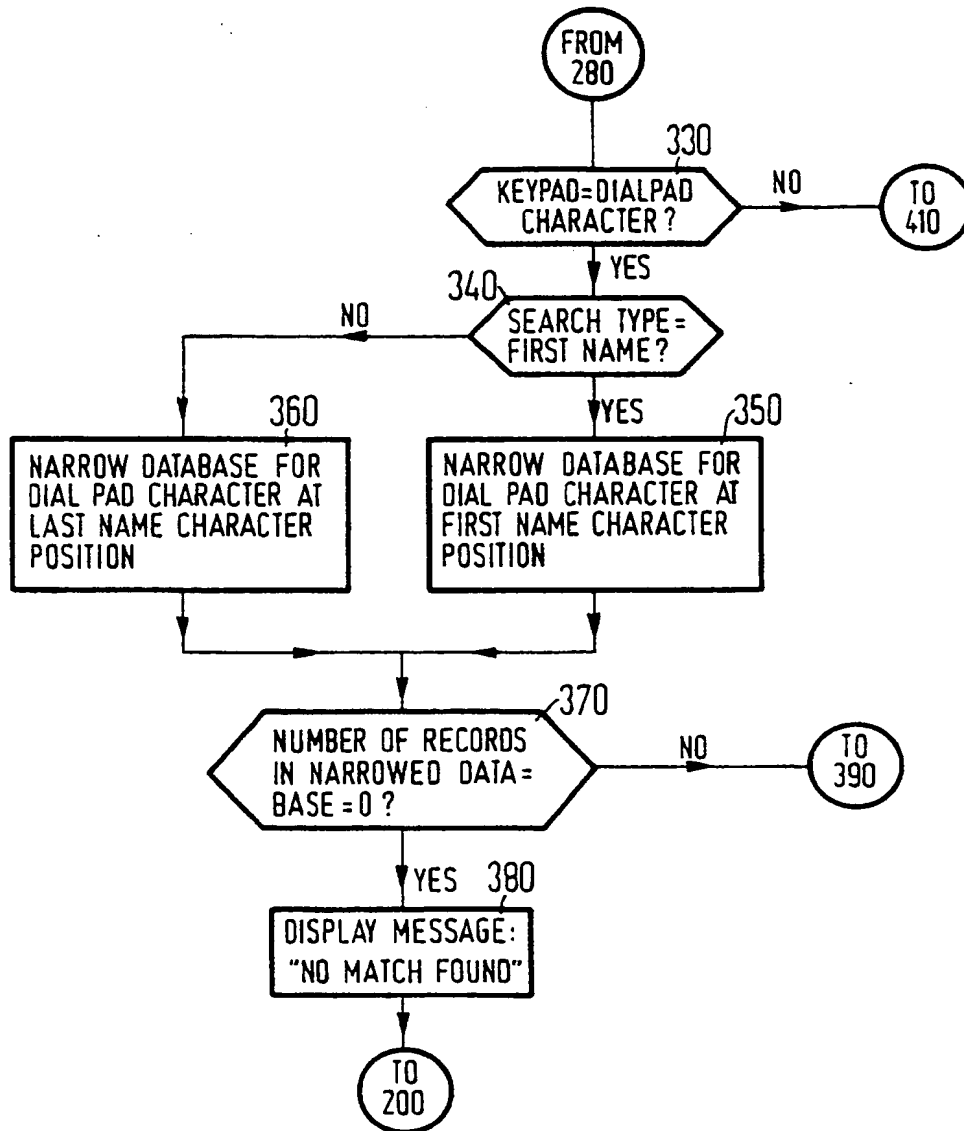


FIG 2D

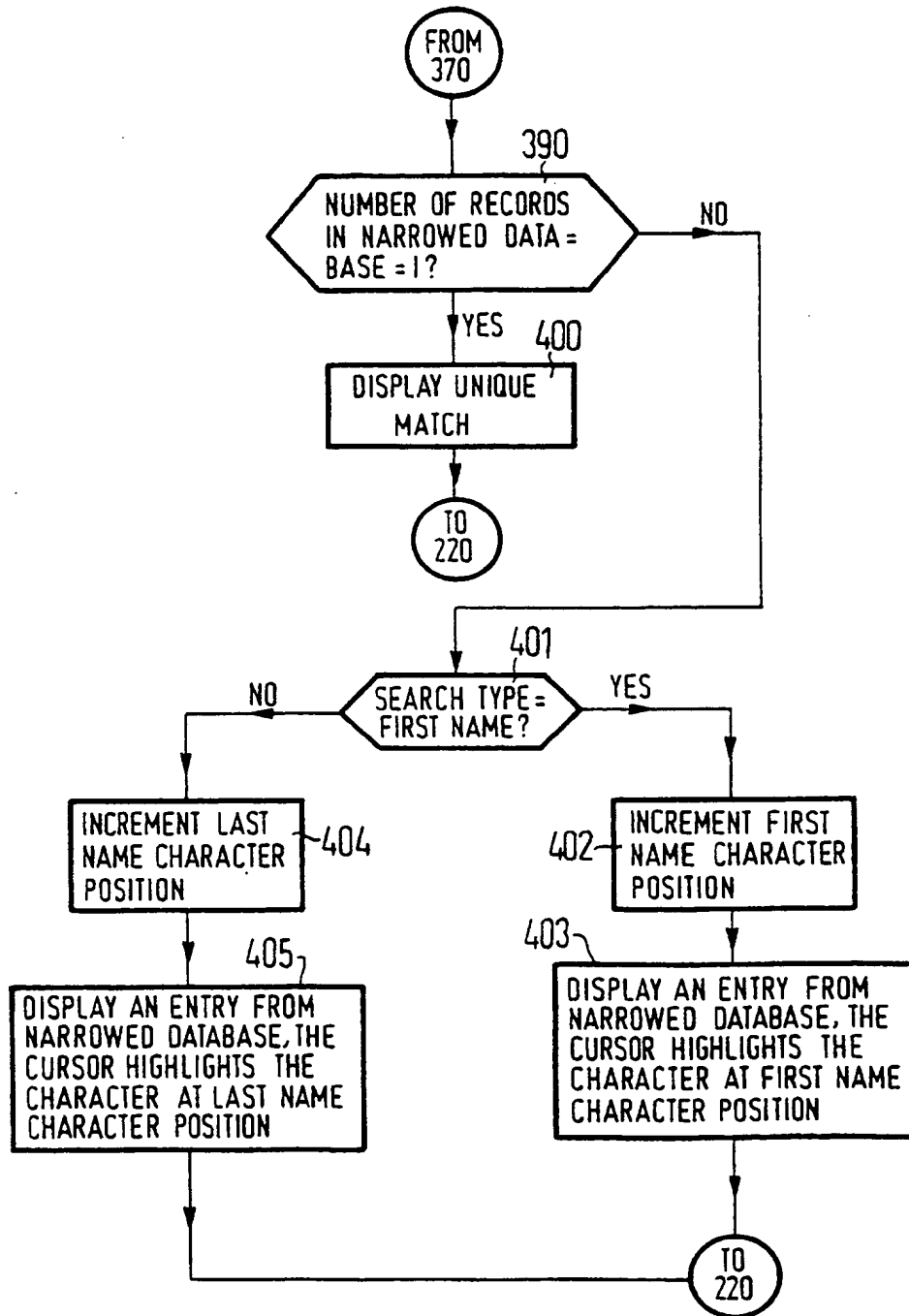


FIG 2E

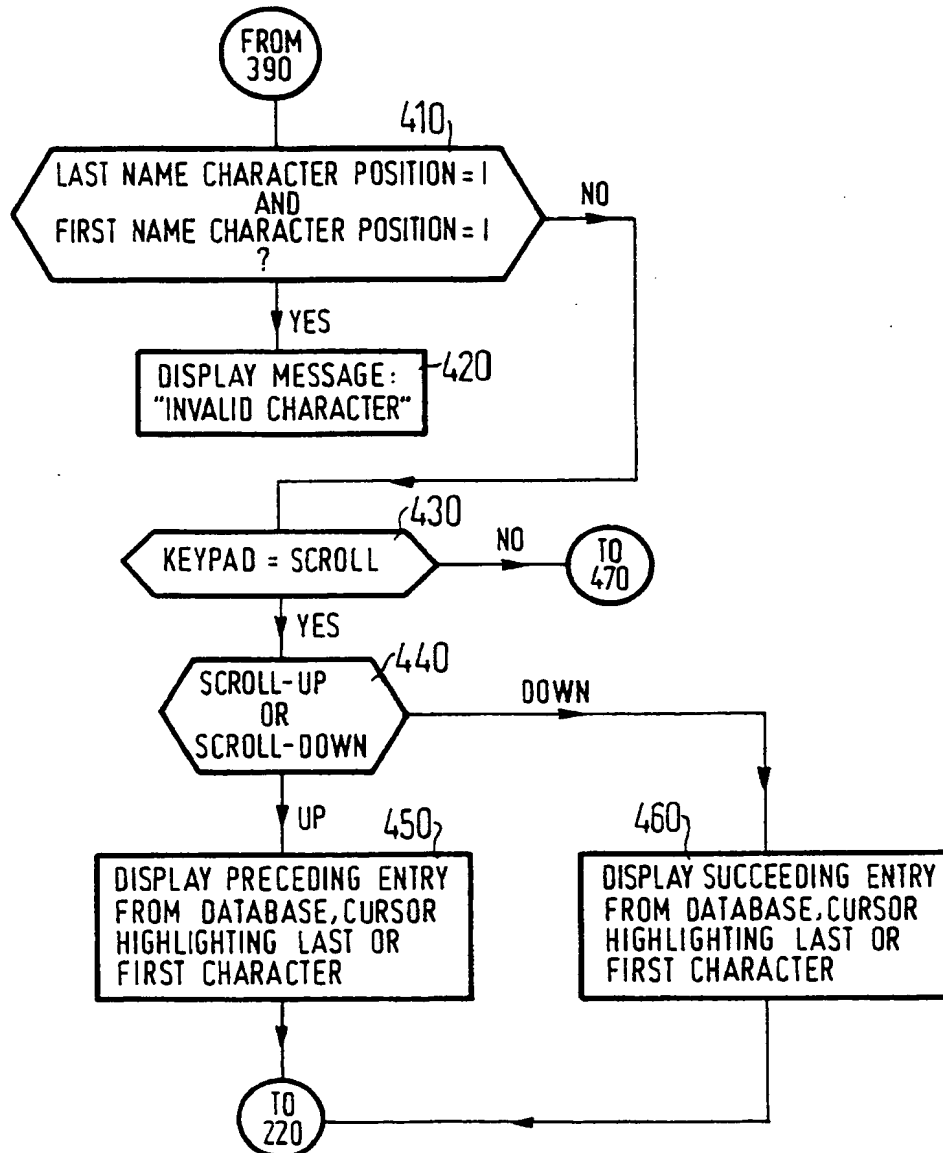
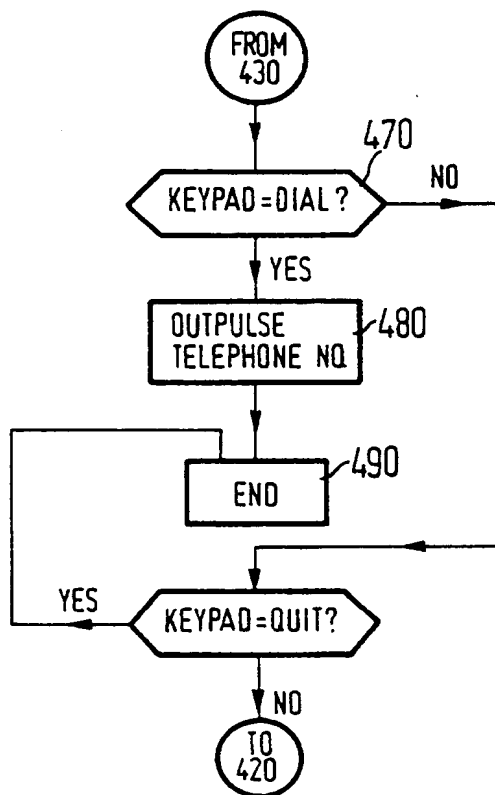


FIG 2F



Reflex Camera

Patent Number:
Publication Number: 2000-0042790
Publication date: 2000. 7. 15.
Inventor(s): KIM, Jong-Ku
Applicant(s): Samsung Electronics Co., Ltd.
Requested Patent :

Application Number: 10-1998-0059072
Application date: 1998. 12. 26
Priority Number(s):
IPC Classification:
EC Classification:
Equivalents:

Abstract

This invention relates to a Korean language (it is referred to "Hangul") inputting device, especially to key inputting device having key buttons on dot matrix key pads in order for user's to input Hangul more conveniently.

The Hangul inputting device having a dot matrix key pads comprises: key buttons on dot matrix key pads which are predetermined to correspond consonants and vowels of Hangul; a memory which stores the consonants and vowels corresponding to the key buttons; and a controller which detects key button input by user, and reads consonant or vowel corresponding to the detected key button form the memory, and processes the read consonant or vowel as a input character.

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(54) 도트매트릭스 키패드의 키버튼을 통한 한글 입력 장치

요약

본 발명은 한글 입력 장치에 관한 것으로, 특히, 도트 매트릭스 키패드 구조에 따른 키버튼을 가지는 키 입력장치에 있어 사용자가 한글 입력을 보다 편리하게 할 수 있도록 하는 한글 입력 장치에 관한 것이다. 이러한 본 발명은, 도트 매트릭스 키패드 구조를 가지는 한글 입력 장치에 있어서, 한글 자음 및 모음 각각의 고유 형태에 일정 정도 유사 대응하는 형태의 도트매트릭스 키패드의 키버튼 들을 미리 지정한 후 상기 지정된 키버튼 들과 그에 해당하는 자음 및 모음을 저장하는 메모리와, 한글 입력모드에서 다수 키버튼 들의 입력이 연속하여 발생하면, 상기 발생된 키버튼 들과 동일한 키버튼 들을 검출하고, 상기 검출된 키버튼 들에 대응하여 저장된 한글 자음 또는 모음을 독출하여 입력 문자로 처리하는 제어부로 이루어짐을 특징으로 한다.

대표도

도2

역배선

도면의 간단한 설명

도 1은 휴대용 무선 전화기에 적용된 종래의 한글 입력장치의 일 실시 예를 보여주는 도면.

도 2는 통상의 도트 매트릭스 키패드를 구비하는 키입력장치에 있어 본 발명에 따른 한글 문자 입력 상태를 나타낸 도면.

도 3은 본 발명에 따른 한글의 각 자음 및 모음에 해당하는 도트 매트릭스 키패드의 키버튼 지정 상태를 나타내는 메모리

테이블.

발명의 기술적 배경

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 한글 입력 장치에 관한 것으로, 특히, 도트 매트릭스 키패드 구조에 따른 키버튼을 가지는 키입력장치에 있어 사용자가 한글 입력을 보다 편리하게 할 수 있도록 하는 한글 입력 장치에 관한 것이다.

통상적으로 전화기 및 그에 상응하는 전화단말 장치에는 통화 수행을 위해 아라비아 숫자 키버튼으로 구현된 키패드의 구비를 통상 필요로 한다. 특히, 휴대용 무선 전화기와 같은 휴대용 통화기기 들은 주목적으로 하는 통화 수행 외에 부가적으로 문자 정보처리의 필요성을 가지도록 하는 기능이 요구되고 있는데, 이때에는 소형화된 본체 크기를 만족하면서 동시에 문자 입력을 사용자가 보다 편리하고 신속하게 수행 할 수 있어야 한다. 특히 한글 문자 입력의 경우에 있어 영문보다 그 문자 고유의 특성상 제한된 키버튼을 통해 필요한 문자 입력을 이루는 것이 상대적으로 곤란한데, 이를 해결하는 여러 한글 입력 방법들이 이미 제안되어 실시되고 있으나 그러한 방법들 또한 아직까지는 사용자에게 불편함을 가져다주었다. 첨부된 도 1의 경우 종래 한글 입력에 있어 통상 사용되는 키패드 구조의 일 실시 예를 보여주는 도면이다. 상기 도 1에 도시되었듯이 필요한 한글 문자 입력을 위해서는 많은 수의 키조합이 필요하며 동시에 각 키의 인지가 있어야 하는 불편함이 따른다.

발명이 이루고자하는 기술적 과제

따라서 본 발명의 목적은 도트 매트릭스 키패드 구조에 따라 제한된 키버튼 수를 가지는 키입력장치에서 사용자가 보다 신속하고 손쉽게 한글을 입력할 수 도록 하는 한글 입력장치를 제공함에 있다.

또한 본 발명은 사용자가 별도의 한글 문자 및 그에 대응하는 키버튼 들의 숙지를 요하지 않으면서도, 편리하게 필요한 한글 문자를 입력할 수 있는 한글 입력 장치를 제공함에 있다.

상기한 목적들을 달성하기 위하여 본 발명은 도트 매트릭스 키패드 구조를 가지는 한글 입력 장치에 있어서, 한글 자음 및 모음 각각의 고유 형태에 일정 정도 유사 대응하는 형태의 도트매트릭스 키패드의 키버튼 들을 미리 지정한 후 상기 지정된 키버튼 들과 그에 해당하는 자음 및 모음을 저장하는 메모리와, 한글 입력모드에서 다수 키버튼 들의 입력이 연속하여 발생하면, 상기 입력이 발생된 키버튼 들과 동일한 키버튼 들을 검출하고, 상기 검출된 키버튼 들에 대응하여 저장된 한글 자음 또는 모음을 독출하여 입력 문자로 처리하는 제어부로 이루어짐을 특징으로 한다.

발명의 구성 및 작용

이하 본 발명의 바람직한 실시 예를 첨부한 도면을 참조하여 상세히 설명한다. 우선 각 도면의 구성 요소들에 참조 부호를 부가함에 있어서, 동일한 구성 요소들에 한해서는 비록 다른 도면상에 표시되더라도 가능한 한 동일한 부호를 가지도록 하고 있음에 유의해야 한다. 또한 하기 설명에서는 구체적인 회로의 구성 소자 등과 같은 많은 특정(特定) 사항들이 나타나고 있는데, 이는 본 발명의 보다 전반적인 이해를 돕기 위해서 제공된 것일 뿐 이러한 특정 사항들 없이도 본 발명

이 실시될 수 있음은 이 기술 분야에서 통상의 지식을 가진 자에게는 자명하다 할 것이다. 그리고 본 발명을 설명함에 있어, 관련된 공지 기능 혹은 구성에 대한 구체적인 설명이 본 발명의 요지를 불필요하게 흐릴 수 있다고 판단되는 경우 그 상세한 설명을 생략한다.

도 2는 통상의 도트 매트릭스 키패드를 구비하는 키입력장치에 있어 본 발명에 따른 한글 문자 입력 상태를 나타낸 도면으로, 특히 한글 문자 'ㄱ' 입력의 경우에 있어 본 발명에 따른 키버튼 입력 상태와, 한글 문자 'ㄴ' 입력 경우에 있어서의 키버튼 입력 상태를 보여주는 도면이다.

상기 도면 참조에 따른 본 발명의 상세한 설명에 앞서, 먼저 본원 발명은 통상의 전화단말 장치에 구비되는 3×4 도트 매트릭스 구조의 키패드에서 실시된다. 이는 본 발명이 그러한 키패드 구조를 가지고 있음을 일반적으로 하는 전화단말장치에 적용되기 때문이다. 따라서 다이얼링 방식의 경우에 있어서도 본원 발명의 실시는 가능할 것이지만, 이러한 경우는 본 발명이 달성하고자 하는 효과가 이루어지지 않을 것이다.

따라서 하기 설명의 경우 통상의 전화단말장치에 있어 구비되는 3×4 도트 매트릭스 구조로 이루어진 키패드를 통한 본원 발명의 실시가 설명된다.

상기 도 2를 참조하면, 먼저 문자 입력 모드에서 한글 입력을 선택한 후 한글 입력 모드로 진입하게 된다. 그리고 사용자가 한글 자음 'ㄱ'을 입력하고자 하는 경우는 상기한 3×4 도트 매트릭스 구조의 키패드에 있어 키버튼 '1', '2', '3', '6', '9'를 일정 시간내에 연속하여 입력한다. 상기한 키버튼들의 입력을 완료하면 한글 문자 'ㄱ'의 입력 완료가 이루어지게 된다. 한편, 본 발명의 실시에 있어 'ㄱ'입력시 상기한 키버튼 입력을 수행하도록 하는 것은, 상기 키패드 구조에서 상기 키버튼들의 구조된 형태가 'ㄱ'의 자음과 그 모양이 가장 유사한 형태로 이루어졌기 때문이다. 이는 사용자가 매트릭스 구조의 키버튼을 통해 한글 입력시 해당 입력 문자와 가장 유사한 형태에 위치하는 키버튼들을 연속적으로 입력하는 것이 해당 문자의 인지 측면에서 편리하기 때문이다. 이러한 관점에서 상기한 'ㄱ' 입력의 경우 상기 키버튼들의 입력 외에 도면상에 도시된 바와 같이 키버튼 '1', '2', '5', '8'들을 연속적으로 입력하여도 될 수 있도록 한다. 모음의 경우에 있어서도 도면상에 그 일 예가 도시되었다. 이를 살펴보면, 한글 문자 입력에 있어 모음 'ㅏ'의 경우에는 그 고유 형태와 유사한 위치에 배열된 키버튼 '2', '4', '5', '8', '0'을 연속적으로 입력하면 된다. 그리고 키버튼 '3', '4', '5', '6', '9'를 연속적으로 입력하여도 상기한 모음 'ㅏ'의 입력이 이루어진다.

즉, 본 상기 도 2상에 도시된 키버튼 입력 상태를 살펴보게 되면, 본 발명의 실시는 한글 문자 각각 고유의 형태와 유사한 형태의 키버튼 입력이 이루어짐을 알 수 있다.

그리고, 그 문자 각각에 있어 유사한 형태에 해당하는 각 키버튼들은 미리 메모리에 저장되어 있게 되며, 그 저장된 키버튼들에 해당하는 키버튼 입력이 있으면 해당 문자 입력을 수행하는 것이다.

도 3은 바로 본 발명의 실시에 따른 한글 입력 장치에 있어, 한글 문자 각각에 해당하여 그 고유의 형태에 유사한 키버튼들을 미리 지정하여 저장한 경우의 메모리 테이블을 나타낸다.

상기 도 3에서는 문자 'ㄱ'의 경우 키버튼 '1+2+5+8' 또는 '1+2+3+6+9'의 입력이 연속적으로 있을 경우에 있어서 입력되면, 'ㄴ'의 경우에는 키버튼 '1+4+5+6' 또는 '1+4+7+8+9'가 연속적으로 입력되는 경우에 있어 입력되는 문자로서 처리된다. 방향키의 경우에는 통상의 방향키 사용과 동일하게 된다.

그리고, 본 발명의 실시에 따른 한글 입력장치는 상기 도 3에 도시된 형태의 메모리 테이블은 구비되는 소정 메모리에 미리 저장되며, 키버튼 입력이 있을시 소정 제어부는 이를 감지하여 상기 메모리에 저장된 내용과 비교하여 해당하는 문자 입력 처리를 하게 된다.

한편 본 발명의 상세한 설명에서는 구체적인 실시 예에 관해 설명하였으나, 본 발명의 범위에서 벗어나지 않는 한도 내에서 여러 가지 변형이 가능함은 물론이다. 그러므로 본 발명의 범위는 설명된 실시 예에 국한되어 정해져서는 안되며 후술하는 특허청구의 범위뿐 만 아니라 이 특허청구의 범위와 균등한 것들에 의해 정해져야 한다.

발명의 효과

상술한 바와 같은 본 발명은 제한된 키버튼 수를 가지는 키입력 장치, 특히 전화단말장치에서 통상 사용되는 3×4 도트 매트릭스 구조의 키패드를 통한 키입력장치를 통한 한글 문자 입력시 사용자가 보다 용이하게 원하는 문자를 입력할 수 있으며, 아울러 별도로 문자 각각에 대하여 지정된 키버튼을 숙지하지 않고도 필요 문자 입력을 용이하게 할 수 있는 이점이 있다.

(57) 청구의 범위

청구항 1. 도트 매트릭스 키패드 구조를 가지는 한글 입력 장치에 있어서,

한글 자음 및 모음 각각의 고유 형태에 일정 정도 유사 대응하는 형태의 도트매트릭스 키패드의 키버튼 들을 미리 지정한 후 상기 지정된 키버튼 들과 그에 해당하는 자음 및 모음을 저장하는 메모리와,

한글 입력모드에서 다수 키버튼 들의 입력이 연속하여 발생하면, 상기 발생된 키버튼 들과 동일한 키버튼 들을 검출하고, 상기 검출된 키버튼 들에 대응하여 저장된 한글 자음 또는 모음을 독출하여 입력 문자로 처리하는 제어부로 이루어짐을 특징으로 하는 한글 입력 장치.

도면

도면1

1 7 L	2 C 2 7	3 D H E
4 A O II	5 X A ô	6 T H F
7 J K L	8 — 1 2	9 T π H
◀ *	0	# ▶

"7"

1	2	3
4	5	6
7	8	9
*	0	#

1	2	3
4	5	6
7	8	9
*	0	#

"1"

1	2	3
4	5	6
7	8	9
*	0	#

1	2	3
4	5	6
7	8	9
*	0	#

5 8 2

5 8 3

문자	입력키 버튼
7	1+2+5+8, 1+2+3+6+9
L	1+4+5+6, 1+4+7+8+9
C	1+2+4+7, 1+2+3+4+7+8+9
↓	↓
↓	4+2+5+8+0, 4+5+3+6+9
	2+5+8+0, 3+6+9+#

TRAITE DE COOPERATION EN MATIERE DE BREVETS

PCT

NOTIFICATION D'ELECTION

(règle 61.2 du PCT)

Expéditeur: le BUREAU INTERNATIONAL

Destinataire:

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 US Department of Commerce
 United States Patent and Trademark
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 Arlington, VA 22202
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Demande internationale no PCT/FR00/01624	Référence du dossier du déposant ou du mandataire BIF 22210 PCT
Date du dépôt international (jour/mois/année) 13 juin 2000 (13.06.00)	Date de priorité (jour/mois/année) 14 juin 1999 (14.06.99)
Déposant NIGON, Alain	

1. L'office désigné est avisé de son élection qui a été faite:

☒ dans la demande d'examen préliminaire international présentée à l'administration chargée de l'examen préliminaire international le:

11 janvier 2001 (11.01.01)

☐ dans une déclaration visant une élection ultérieure déposée auprès du Bureau international le:

2. L'élection ☒ a été faite

☐ n'a pas été faite

avant l'expiration d'un délai de 19 mois à compter de la date de priorité ou, lorsque la règle 32 s'applique, dans le délai visé à la règle 32.2b).

Bureau international de l'OMPI 34, chemin des Colombettes 1211 Genève 20, Suisse no de télécopieur: (41-22) 740.14.35	Fonctionnaire autorisé Henrik Nyberg no de téléphone: (41-22) 338.83.38
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